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cut up its sandstone formation" (p. 525). When the explorer crossed these hills, he found "the very accidented plateau . . . covered by long coarse matted grass, beneath which . . . the surface is strewn with sharp boulders . . . Day after day we came suddenly upon deep gorges, necessitating long détours . . . A few days later we got down with difficulty to the forest" (p. 527). The reader may perhaps picture this plateau as being capped with horizontal sandstones on a base of some weaker structure, elaborately dissected by retrogressive insequent gorges and ravines. If this be the case, it would seem to have been an easy matter for the author to make explicit statement of the significant facts, and thus relieve the reader from the uncertainty in which he must otherwise remain. Surely, the addition of a few technical or explanatory terms, like horizontal sandstones and mature insequent ravines, or something of like nature, would not be out of order in an article which abounds with strange words like *pium*, *tucandera*, *chunta*, *espundia*, *barracas*, *haputama*, *apazancas*, *gehene*, and *mungruyu*, these being the native names for various insects, diseases and other things, for which no equivalent is found in our vernacular.

W. M. DAVIS.

GEOGRAPHICAL RECORD

NORTH AMERICA

LAND SURVEYS IN ALASKA. The U. S. Geological Survey during the present year is making public-land surveys in Alaska under plans approved by the Commissioner of the General Land Office. An appropriation for this work was made at the last session of Congress. The appropriation is being used for subdividing the agricultural lands of Alaska so that they may be taken up by homesteads. The work to be done this season will cover the arable lands around Fairbanks, where many homesteads have already been taken up. A standard parallel and prime meridian will be established and, if time is available, some township lines will be run. The section lines will be run next season. These surveys are being made under the direction of Alfred H. Brooks, in charge of the division of Alaskan mineral resources of the Geological Survey. R. H. Sargent has direct charge of the field operations. He is assisted by C. L. Nelson, W. N. Vance, and S. G. Lunde. Mr. Sargent's party, which sailed from Seattle for Skagway on July 5, includes five or six other assistants, and additional men will be employed at Fairbanks, where horses and supplies will be purchased. The work will be carried on by three parties, each including six to twelve men and six horses. After organizing the work at Fairbanks, Mr. Sargent will go by trail to Valdez. He will make preliminary examinations in the Copper River valley for the purpose of preparing comprehensive plans for land surveys in that region. Mr. Brooks left Washington late in July for Knik and Cook Inlet, to make investigations on which to base land surveys in that district. Later he was to visit the Fairbanks parties. The Superintendent of the Coast and Geo-

detic Survey has sent a party to Fairbanks to make determinations of latitude, longitude, and azimuth to which the proposed land surveys will be tied.

MOUNTAIN AND VALLEY WINDS IN THE YOSEMITE VALLEY. In *Science* for April 15, 1910, François E. Matthes, of the U. S. Geological Survey, gives an account of the mountain and valley breezes in the Yosemite Valley which directs attention to the importance of these daily wind changes in that region. During the daytime, on the sunlit slopes, the dust from the horses' hoofs rises slowly in a cloud which accompanies the traveller who is ascending the zigzag path. On the shaded slopes the air currents set down hill, so that travellers who are descending continually meet their own dust, coming down from the trail above. In order to make the journey without the unpleasant accompaniment of the dust-cloud, the ascent should be undertaken when the slope is in shadow, and the descent when the slope is sunlit. This Mr. Matthes soon learned to do, successfully.

The up-cast and down-cast breezes alternate with rhythmic regularity. In the summer of 1905 the smoke from forest fires near the lower end of the valley was carried up the valley by the morning breeze, and by 9 or 10 A.M. it was hardly possible to see across from rim to rim. In the late afternoon, the down-cast mountain breeze swept the valley clear of smoke. This phenomenon continued daily for four months with scarcely an interruption: an almost tropical regularity, it may be observed, possible only because of the dominance of diurnal and the absence of cyclonic control. The placidity of Mirror Lake, likewise, depends on the blowing of the mountain and valley breezes. The water is most mirror-like in the early morning, when the down-cast mountain breeze has died out, and before the updraft of daytime has set in. The Yosemite Valley further shows very clearly the resemblance between the air-currents and the natural water-courses. The nocturnal down-cast breeze not only follows the bottom of the valley trough, as a channel, but also receives tributary air currents from the side Valleys. Mr. Matthes speaks of the "chilling down-drafts that poured upon him," during his evening trips, from the mouths of the lateral hanging valleys.

R. DEC. W.

THE DES PLAINES VALLEY OF ILLINOIS. The second of the educational bulletins of the Illinois State Geological Survey (T. W. Goldthwait, *Bull.* 11, Illinois Geological Survey, 1909, 1-103+x pages, with 9 plates and 21 figures) is another excellent example of the official publications by State geological surveys of the middle west for use of the people and the public schools of the region.

In simple, untechnical language Professor Goldthwait discusses the geography and history of the Des Plaines river, the structure and the concealed surface of the bed rock, and the glacial and interglacial deposits. The physiographic history of the Des Plaines is sketched, floods are discussed, and specific field trips in the area are suggested.

L. M.

CLIMATE, MAN AND IRRIGATION IN THE GILA VALLEY. Dr. J. Walter Fewkes (Smiths. Misc. Coll., quarterly issue, Vol. 5, Part 4, 1910) has made a notable study of the "Prehistoric Ruins of the Gila Valley," reaching some conclusions which are worthy of attention on the part of climatologists as well as of anthropologists and ethnologists. The region where the Gila River and its two tributaries, the Salt and the Santa Cruz, emerge from the mountains, has a rainfall not regular enough for successful agriculture without irrigation. The ancient irrigating ditches, which can be traced for miles, show that the prehistoric

inhabitants applied a more extensive system of irrigation than any of their contemporaries in other sections of what is now the United States. The district required large irrigation undertakings; this meant coöperation and intelligent leadership; and hence there resulted "a sociological condition higher than any that existed among bands of hunters, fishermen, or even agriculturists depending on natural rainfalls." Coöperation in irrigation naturally encouraged the construction of other large public works, for defence, or storage, or ceremony. Thus the Casas Grandes originated. Dr. Fewkes believes that the abandonment of the Casas Grandes resulted from an invasion of nomads in prehistoric times, (and not, it may be noted in passing, from a change of climate). This whole study emphasizes once again the far-reaching consequences which hinge upon the all-powerful control of climate over human life, in so many of its activities, and customs, and in its development towards higher (or lower) standards.

R. DEC. W.

DIVISION OF THE MONTREAL RIVER. In a paper read by Dr. Robert Bell of Ottawa at the Twenty-second Annual meeting of the Geological Society, last December, he described a remarkable example of change in the destination of a large river in which the stream has been diverted in post-glacial times into a new channel that carries its waters all the way to its present mouth in a straight course of 90 miles, which lacks only 45° of being exactly opposite to that of the upper part of the stream, as well as its former continuation below the point at which the change took place; that is to say, at a certain point the course of the Montreal River (flowing into Lake Timiskaming) was turned round through an angle of not less than 135°, or from a north to a southeast direction, and made finally to discharge into the Atlantic Ocean instead of Hudson Bay. This singular occurrence was rendered possible from the fact that in one part of its course the river was barely able to pass across what has now become a low divide, and that a slow rising or tilting of the land to the southward gradually stopped the northward flow of the river, while at the same time the changing conditions induced a process of "stream-robbing" through a dam of loose drift material a short distance east of this increasing obstruction. The paper described numerous facts, which, taken together, seem to prove the manner in which this important and interesting phenomenon was accomplished.

THE UNITED STATES BUREAU OF MINES. The act establishing a Bureau of Mines in the Department of the Interior, approved May 16, 1910, became effective July 1. Carrying out the intent of the law, the Secretary of the Interior has transferred to the Bureau of Mines the investigation of mine accidents and fuels, together with the personnel and equipment of these investigations. The fuel investigations under the Geological Survey have already resulted in a better realization throughout the country as to the value of fuels. One result of this work is that nearly all of the fuel now purchased by the federal government is bought on specifications and subject to test by the Fuel division, or purchased after examination made of the coal supplied by the mines from which coal is delivered to the government. The publications of the Survey relating to mine and fuel investigations will in the future be distributed by the Bureau of Mines. The first of the Bureau of Mines bulletins, the *Volatile Matter of Coal*, by H. C. Porter and F. K. Ovitz, will be published in the next few months. These publications when issued can be obtained by addressing the Director of the Bureau of Mines, Washington, D.C.

SOUTH AMERICA

THE MONTAÑAS OF WESTERN BRAZIL. Mr. A. Lange, who has been travelling in the regions of the Upper Amazon, sent the following notes to the *Bulletin* from the River Javary:

"As Montañas are to be understood the forest regions on both sides of the Amazon River, especially south of the river. The regions which are framed in by the Javary River on the west, and the rivers Acre and Madeira on the south, are generally designated as the Montañas. They consist of forests of immense extent, through which numerous rivers flow, all of which empty into the Amazon. For more than six months of the year, these regions are partly under water, and at times are rendered uninhabitable. However, there are scattered all over, areas which are high enough to remain dry even at the highest river. These areas are few and valuable. It is here that people can build houses, thus forming communities whose size and commercial importance depend upon their accessibility and the local conditions. On the lower Amazon, these towns are not more than about 100 miles apart, but here in the remotest parts of the Amazonian affluents, they are few and very far apart (between 200 to 300 miles).

"Rubber is the product which absorbs all the energy of this country, and it is by far the most profitable. Without rubber the population would have no adequate resources. As long as the working of rubber pays the ordinary laborer as much as 40,000 Reis (\$12) a day, he will not bother with cultivating the soil. For this reason, it can easily be understood that the valley or Montaña region will not otherwise be developed; not that the natural conditions are unfavorable, but simply because labor and energy are lacking. The seringueiro or rubber-worker must subsist upon imported canned goods, although the land upon which he treads could give him meat, vegetables and fruit in abundance, if only the labor and energy necessary to produce them were at hand.

"The owner of rubber land lives on some high point of the river front. He has a concession of a certain number of rubber land areas, often extending as much as thirty to forty miles along the river front, and from fifteen to twenty miles back in the woods. To work such an area a force of fifty to seventy-five seringueiros is necessary. Their work consists in cutting a path through the woods, locating the rubber-trees, tapping the precious milk, and smoking it and practically represents the extent of the present development of the Montañas.

"Although these forests contain incalculable quantities and varieties of trees, of superior quality for industrial purposes, yet their existence is hardly recognized and, at any rate, is not utilized. There are immense fortunes in valuable trees which are now simply rotting.

"The possibility that white planters will ever cultivate this enormously rich land is still very remote. Nature taxes the intruder in these forests so heavily that no one is willing to risk life or health for any product that will not give large remuneration in a short time. Malaria and swamp fever attack man, even though the utmost care be taken to protect him against the infectious bite of the mosquito. The so-called pium is a veritable plague, causing small hemorrhages wherever it bites. The mysterious and fatal disease Beri-Beri has greatly increased the mortality in these regions.

"Attempts, however, have been made by white settlers in the lower Amazon Valley to cultivate this extremely fertile land. At Santarem, about 400 miles from the mouth of the Amazon, a colony of Americans from Mississippi settled

shortly after the Civil War. The labor conditions then prevailing in Brazil, and especially the use of slaves, corresponded with the customs of their former home, and for years they successfully cultivated cacao and coffee. But after the abolition of slavery in Brazil, they found themselves deprived of their slave help and, gradually gave up their work and, to-day only the memory of this attempt of white men to cultivate the soil remains."

CLIMATE OF CHILE. The climate of Chile presents many peculiarities of interest. In the late Dr. C. Martin's "*Landeskunde von Chile*" (Hamburg, 1909) there is a clear account of the climatic features which have been of marked consequence in the economic development of the country. Distance from the ocean, and altitude, have almost more influence than latitude. Along the coast the marine control is so emphatic that the seasons become merged, and lose their normal characteristics. From Tacna to Copiapo is the arid portion, with five distinct climatic zones, parallel with the coast, between the ocean and the Cordillera. The warm region is between Coquimbo and Curicó, with dry summers, necessitating irrigation, but with sufficient winter rainfall. The rainy district is in the provinces of Valdivia, Llanquihue and Chiloe, where heavy rain-falls, alternating with strong northwest squalls, are common. The Patagonian and Tierra del Fuego portion is very rainy along the coast, but inland the rains are less marked as they move up the valleys. The upper valleys are dry, and the pampa to the east is almost rainless. Forest fires occur in the sub-Andine transition belt. Descriptions are given of the weather in different parts of Chile.

Such an account of Chilean climates as this one makes the section on climate in the recently published "*Handbook of Chile*," of the International Bureau of the American Republics (1909) seem almost hopelessly inadequate. At the present time, when so much accurate information is available concerning the meteorological conditions of Chile, there is no reason why any publication, especially an official one, should give its readers so poor a discussion of climate as that contained in this Handbook.

R. DEC. W.

AFRICA

SCULLING MATCH ON THE ZAMBESI. The results of the sculling match on the Zambesi river, for the championship of the world, on Aug. 18, were known in every land on the following day, illustrating again the rapidity with which things are moving in Africa. Only a half dozen or so of white men had ever seen these falls, fifteen years ago, though Livingstone discovered them in 1855. Now, trains carry to them throngs of tourists who find sumptuous entertainment, at tip-top prices, while they utilize the many conveniences provided for comfortable inspection of this wonderful cataract.

The race was rowed a little above the falls, for the Victoria Falls of the Zambesi have a peculiarity that is all their own. Fancy rowing a race a little above Niagara! The waters there surge and foam along at breakneck pace; but the Zambesi waters, similarly placed above the falls, are comparatively smooth and move with scarcely accelerated speed to the lip of the chasm. One of the great world rivers, the fourth largest of Africa's splendid waterways, a mile wide, moves placidly and quietly to the gorge, and there is dropped 400 feet. It is the most unique and one of the most colossal facts in stream hydrography.

On the waters where Livingstone floated safely down to the island over whose edge he peered into the chasm, this race was rowed. It was his burning en-

thusiasm, his sublime faith in Africa, that kindled the mighty movement which is bringing about the transformation of a continent. But even Livingstone would scarcely have dreamed that, in a few decades, men would gather from other continents to witness a sporting event in the middle of Africa, between athletes of London and Australia at the great falls he discovered.

IS THERE PROGRESSIVE DESICCATION IN THE SAHARA? Reports of progressive desiccation in different parts of the world, leading to a belief in climatic change, may often be explained as the result of a change in government, or of a change in the character of the local population. Thus, a government which lacks power and does not properly direct the activities of its people, or decreased enterprise and energy on the part of the people themselves in their efforts to keep back the advancing sands of the desert, may readily lead to what travellers take to be signs of a progressive change of climate, from wetter to drier, resulting in the abandonment of the region by its inhabitants. A situation of this sort was described by Mr. Hans Vischer, before the Royal Geographical Society, in an account which he gave of a journey from Tripoli across the Sahara to Lake Chad. Ruined towns, monuments of ancient art and industry, prehistoric stone implements, and a few struggling villages where there are water-holes, show "the various stages of man's struggle against nature, and the unavoidable end—the dead and waterless desert." When man retreats, and the desert is left alone, the sands claim everything, just as the tropical forest covers the ground when man ceases to cut down the trees and bushes. The history of the country between Tripoli and Fezzan shows that the desert does not drive man away, but claims any ground left by him. The advance of the desert is following on the depopulation of the country, and not on any change of climate. There is every hope that the advance of the desert may be stayed within the next few years. With a strong government in Tripoli the people will gain confidence in themselves; the Young Turk element is making itself felt; with French garrisons in Air and Bilma old trade routes will be reopened, "and the oases will once more be held by men against the desert."

R. DEC. W.

ASIA

NEW METEOROLOGICAL OBSERVATORY IN THE PHILIPPINES. A new meteorological and geodynamic station has been established by the Philippine Weather Bureau in the town of Baguio, Benguet. The building is on an isolated hill, rising 216 feet above the Baguio plateau, whose altitude is 4,740 feet (mean). Construction was begun in November, 1907, and completed in September, 1909. The building serves a twofold purpose, as a sanatorium for the Mission of the Jesuits in the Philippines, and as a branch station of the Manila Observatory.

The first publication of the new observatory bears the date 1909. There is a summary report on the climate of Baguio, which "confirms the idea that Baguio is eminently fit to become the health resort of the Philippines and possibly of the entire tropical regions of the Far East." A previous report, "The Climate of Baguio, Benguet," appeared in the Annual Report of the Director of the Philippine Weather Bureau for 1901-02. The present report summarizes all available data up to the present time.

The equipment of the new Observatory comprises two anemographs, two mercurial barometers, a barograph, Marvin electric heliograph, Campbell sunshine recorder, electrically registering rain gauge, the usual thermometers; Piche evaporimeter; Richard psychograph. There is also a microseismograph (Omori type).

R. DEC. W.

EUROPE

POPULATION OF THE NETHERLANDS. The census of Dec. 31, 1909, gives the Netherlands a total population of 5,853,037, which is an increase of 1.38 per cent. in the last ten years. There are 2,896,154 males and 2,956,883 females. The density of population is 177 to the square kilometer. The population of the largest cities is Amsterdam, 566,927; Rotterdam, 415,168; Haag, 272,887; Utrecht, 118,877; Gröningen, 74,596; Haarlem, 68,244; Arnheim, 64,167; Leiden, 58,263. Of the total population, 4,114,759 live in towns. This is 70.3 per cent. of the inhabitants, while the agricultural population forms only 29.7 per cent. of the total.

NEW MAP OF SICILY. The representative of the Military Geographical Institute in Florence announced at the recent meeting of the Eighth Italian Geographical Congress, at Palermo, that a new survey of the whole island of Sicily has been planned and triangulation is already under way. The work will be carried out on a scale of 1:25,000.

COLD SPELLS IN EUROPE. In the eastern United States we are so accustomed to the movement of our cold waves in an easterly direction, and to their association with northwest winds, that many persons are surprised to find that in Europe the cold usually comes from the northeast, and progresses towards the southwest. This is the natural result of the presence of the cold continental area to the east and of the warm ocean area towards the west. A study of several cold spells during the winter of 1908-09, in Central Europe, by Dr. A. Fessler (*Meteorol. Zeitsch.*, Jan., 1910), brings out very clearly the general conditions which are associated with several typical European "cold waves," using the word in a general sense. The progress of the 32° F. isotherm between October 16 and 23 shows most strikingly the movement from northeast to southwest, the water areas on the north and the mountains on the south serving as checks to the advance of the low temperatures in those directions. The winds were distinctly northeast throughout the cold area. Obviously, this was a clear case of imported cold, although local radiation played a part, locally, in lowering the temperature, and in lengthening the period of cold. A further study, of the "cold waves" of November and December, 1908, and of January, 1909, shows that they were all associated with an area of high pressure over the continent, which moved slowly towards central Europe, with easterly and northeasterly winds blowing from Asia and from Russia towards central Europe. In one of these cases, there was no cooling by local radiation, as the sky was continuously cloudy, with fog and rain. In another case, the cold was chiefly produced by local radiation. And in still another case, of a very different sort, there was active air movement from the northwest, with an initial lowering of temperature resulting from importation, followed by considerable cooling due to radiation. There seem, therefore, to be these three types of cold weather: (a) cooling by importation from the northeast, plus local radiation; (b) cooling by local radiation; (c) cooling by importation from the northwest, plus local radiation.

R. DEC. W.

POLAR

CAPTAIN BERNIER'S ARCTIC WORK THIS YEAR. Capt. Bernier, the Canadian Polar navigator, is now supposed to be in Canadian Arctic waters, with the Government's permission to attempt the Northwest Passage and bring his vessel around to Victoria, B. C. He sailed from Quebec on the steamship *Arctic*, in

June last. A letter received from him at the Department of Marine, dated Chateau Bay, Labrador coast, July 12, included this memorandum giving the programme of his two years' cruise, as follows:

From Chateau Bay he proposed to sail for Albert Harbor, Pond's Inlet, on the north shore of Baffin Island; thence he meant to proceed to Beechy Island, at the western end of Lancaster Sound. The next place of call would be Dealy Island, in Melville Sound, and then Winter Harbor on Melville Island, at the entrance to McClure Strait. From there he expects to complete the Northwest Passage to Herchel Island, next year, where the Arctic sealing vessels have headquarters. The remainder of the trip around Bering Sea to Victoria will be comparatively easy sailing.

SUNBURN AND FROSTBITE IN THE ANTARCTIC. In Lieut. Shackelton's account of his South Polar Expedition he says it was quite a common occurrence to feel one side of the face freezing while the other side was being sunburned. The Manchurian ponies would have frozen perspiration on their coats on the sheltered side, while the other side was kept dry and hot in the sun. On Dec. 4 the men were marching stripped to their shirts, and were much sunburned, although at noon that day the temperature showed "10° of frost." These observations recall the note made by Scoresby, many years ago, regarding the difference between the sunny and shady sides of his vessel in the Arctic. Scoresby pointed out that the pitch bubbled in the seams of the deck in the sun, while, in the shade, the side of his ship was covered with ice.

R. DEC. W.

PHYSICAL GEOGRAPHY

TIDAL RESULTS ON THE PACIFIC COAST. An extended series of tidal observations was obtained by the Canadian Tidal Survey during the summer of 1909, under the personal supervision of Dr. W. Bell Dawson, the Superintendent of the Survey. There were in all a series of twenty recording tide gauges in simultaneous operation along the coast of British Columbia. These were placed at carefully selected points with a view to utilizing them as a basis for the determination of tidal differences at intermediate places; and also to define the extent of the region which can be referred to each of the principal tidal stations for which tide tables are published. The results of these investigations, when reduced to practical shape, will appear in the Tide Tables for 1910. The tidal data for New Westminster, Frazer River, and for Port Essington, Skeena River, appear in "Notice to Mariners, No. 32, 1910." They afford examples of the general question of the progress of the tide in ordinary shallow estuaries, and in deep inlets. They are in no sense, therefore, of merely local interest or local application, but illustrate the rate of progress of the tide relatively to the depth of the channel or inlet.

GENERAL

Prof. George D. Hubbard, who has had charge of the work in Physiography, at the Ohio State University, for the past five years, has resigned that position to go to Oberlin College, Oberlin, Ohio, where he will have charge of the department of Geology.

PROPOSED REFORM OF THE CALENDAR. The Society has received the following from Mr. Fritz Reininghaus of Zürich:

"I recommend the following reform of the calendar:

"The division of the year into twelve entire and two-half months; all entire

months to consist of 28 days, and the half-months of 14 days. The first of the two half-months will be placed at the end of the first half year, and will be known as the Summer half-month; the second half-month will follow the last month of the year, and will be known as the Winter half-month.

"The 365th and the leap-year's day will be placed at the end of the year, and will be quite independent of the week or month, so that these days will neither have the name nor the date of a week-day.

"I had at first expressed the idea (which I thought quite new) of dividing the year into 13 months of 28 days each; but it has come to my knowledge that this proposal had already been advocated by Auguste Comte, the philosopher, who died in 1857. After consideration, I would advise the above-mentioned division as being more practical.

"The advantages of such a calendar would be as follows:

"Each day of the week would be in its fixed and unchangeable place in the future.

"Each month would begin on the same week-day, this also applying to each year, each half-year and each quarter of the year.

"This division would make the week and month measures of time, because the units 'year' and 'month' would, by this means, become, with an insignificant difference, complete multiples, always equal, of the time-unit 'week,' which is not the case at present."

Mr. Reininghaus has also sent a fuller explanation of his proposition in a pamphlet entitled "Kalender-Reform Vorschlag."

INDEX TO METEOROLOGISCHE ZEITSCHRIFT. Everyone who has to do with meteorology or with climatology will always find the *Meteorologische Zeitschrift* an absolutely indispensable source of information. It is the authoritative meteorological journal of the world. The use of this journal has been very greatly facilitated by the recent publication of an author and subject index, covering the period 1884-1908, *i. e.*, twenty-five volumes (Braunschweig, 1910, Friedrich Vieweg und Sohn). Those who use this index are pretty certain to miss no important publication issued during the period in question. The index includes all titles listed in the bibliography, although these may not have been noticed or reviewed in the text.

R. DEC. W.

HALLEY'S COMET. All observers seem to agree that the earth did not pass through the tail of Halley's comet, as it had been predicted it would do, on or about May 18. Mr. Knox Shaw, in No. 4418 of the *Astronomische Nachrichten*, says that the tail was only 8° wide when observed on May 18, and its increased breadth next morning suggests that it was bent back in the orbit and probably did not begin to sweep past the earth before 12h., Greenwich mean time, on May 20. At this time the earth was some four million miles south of the comet's orbit plane, and consequently the tail probably passed well to the north of the earth, for the Helwân observations, during May, suggest that it was not nearly wide enough to envelop the earth at that distance. They also show that its length was well over 20,000,000 miles, and would therefore have enveloped the earth if the planes had coincided. No sign of the comet's transit of the sun's disc was observed, although observations were made with the 4-inch Cooke equatorial.

SLEEPING SICKNESS. *Petermans Mitteilungen* (11 Halbband, 2 Heft, 1910) has a map showing the geographical distribution of sleeping sickness and illustrating an article on the subject by Dr. G. Meyer. The map is based upon those published by the British Sleeping Sickness Bureau (Oct., 1910), which is active both in investigation and publication. The thirteenth *Bulletin* of the Bureau (Royal Society, London, 1910), begins the second volume of this useful publication. The *Colonial Reports* (Miscell., No. 65, Dec., 1909, London), have a "Report on the Measures adopted for the Suppression of Sleeping Sickness" by Dr. Hesketh Bell, in which he gives an historical account of the progress of discovery and research, and a summary of the results gained, with regard to sleeping sickness. *Nature* (May 5, 1910) in a summary of this paper, says that the researches of Kleine and Bruce have shown that the trypanosome of sleeping sickness goes through a developmental cycle in the tsetse-fly, and that once the trypanosome has established itself, the fly remains infective, apparently for the rest of its life, without again feeding on the blood of an infected person. It follows that the period for which healthy persons must be removed from the fly belts, in order to insure that infection has died out in the flies, is much longer than was thought, and cannot at present be stated definitely. There are two other possibilities that complicate the problem of the transmission and spread of the disease. One is that an infected tsetse fly may transmit the infection to its offspring. The other, that some vertebrate animal other than man may harbor the trypanosome of sleeping sickness in its blood and so be a "reservoir host" which keeps up the infection in the flies. Further, to keep the natives, probably much against their inclination in many cases, more than two miles from the shore along the immense coastline of the Victoria Nyanza is a task of considerable difficulty. The natives are evicted from homes which they and their ancestors have inhabited for untold generations and moreover, most of them are sceptical as to the agency of the tsetse fly in the transmission of the disease. It is therefore probable that in spite of administrative prohibitions, some natives evade the regulations against frequenting the danger zone.

As to the distribution of the disease in Africa, at the present time, it extends on both sides of the Equator about half way to the tropics, from the Atlantic eastward to Victoria Nyanza and Lake Tanganyika, and it has already appeared on the northern shores of Lake Nyasa. It is claiming victims in the islands of Principe and Fernando Po, Gulf of Guinea. The most southerly point it has yet reached on the coast of the mainland is Benguella, Angola. While the stamping out of the terrible disease is not yet in view, there are some hopeful indications. It is said that a majority of the mild and some of the severe cases are now cured by the Atoxyl treatment. For a long time, it seemed as though everyone afflicted with the disease was doomed.